

REMARKS

The Official Action mailed May 19, 2005, has been received and its contents carefully noted. Filed concurrently herewith is a *Request for One Month Extension of Time*, which extends the shortened statutory period for response to September 19, 2005. Also, filed concurrently herewith is a *Request for Continued Examination*. Accordingly, the Applicants respectfully submit that this response is being timely filed.

The Applicants note with appreciation the consideration of the Information Disclosure Statements filed on March 24, 2000, December 19, 2000, September 25, 2001, November 30, 2001, July 18, 2002, February 24, 2003, March 17, 2003, November 30, 2004, December 23, 2004, and February 9, 2005. A further Information Disclosure Statement is submitted herewith and consideration of this Information Disclosure Statement is respectfully requested.

Claims 2-13, 15-27 and 29-42 were pending in the present application prior to the above amendment. Claims 3-13, 15-27 and 29-42 have been canceled, claim 2 has been amended to better recite the features of the present invention, and new claims 44-74 have been added to recite additional protection to which the Applicants are entitled. Also, as shown in detail above and described in detail below, the specification has been amended to correct minor clerical, typographical and grammatical errors. Accordingly, claims 2 and 44-74 are now pending in the present application, of which claims 2, 48, 53, 59, 65 and 70 are independent. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

In the parent application Serial No. 08/784,294, 36 pages of specification, claims and abstract in the Japanese language ("the Japanese language specification") were filed on January 16, 1997, which was based on Certified Japanese Priority Document 8-088759. The Japanese language specification is the basis of disclosure in the present application. A *Verified English Translation* of the Japanese language specification was filed May 14, 1997. In pertinent part, claim 10 (bridging pages 2 and 3), paragraph [0038] (page 9), and paragraph [0087] (page 16) of the Japanese language

specification correspond with claim 10 (page 2), paragraph [0038] (bridging pages 8 and 9) and paragraph [0087] (page 15) of the *Verified English Translation*. Copies of pages 2, 3, 9 and 16 of the Japanese language specification and pages 2, 8, 9 and 15 of the *Translation* are attached herewith, along with copies of the stamped received postcard from OIPE indicating the date of receipt of each of the above-referenced documents in the parent application. The present specification is a copy of a *Substitute Specification*, which was filed in the parent '294 application on December 20, 2000. As detailed below, there are minor typographical errors in both the *Verified English Translation* and in the *Substitute Specification*.

In line 3 of claim 10 (bridging pages 2 and 3) of the Japanese language specification, a concentration of a metal element which promotes crystallization of silicon of " $5 \times 10^{18} \text{ cm}^{-3}$ " is clearly shown.

【請求項 10】

結晶性を有する珪素膜を有する半導体装置であって、

前記珪素膜には、

珪素の結晶化を助長する金属元素が $1 \times 10^{16} \text{ cm}^{-3} \sim 5 \times 10^{18} \text{ cm}^{-3}$ の濃度で含まれ、

フッ素原子が $1 \times 10^{15} \text{ cm}^{-3} \sim 1 \times 10^{20} \text{ cm}^{-3}$ の濃度で含まれ、

水素原子が $1 \times 10^{17} \text{ cm}^{-3} \sim 1 \times 10^{21} \text{ cm}^{-3}$ の濃度で含まれ、

ていることを特徴とする半導体装置。

Due to a typographical error in preparing the *Verified English Translation*, the concentration of a metal element which promotes crystallization of silicon of " $5 \times 10^{18} \text{ cm}^{-3}$ " was inadvertently changed to " $5 \times 10^{19} \text{ cm}^{-3}$ " in line 3 of claim 10 as originally filed (page 2).

10. A semiconductor device having a silicon film having a crystallinity, characterized in that said silicon film contains the metal element which promotes crystallization of silicon in concentration of $1 \times 10^{16} \text{ cm}^{-3}$ to $5 \times 10^{19} \text{ cm}^{-3}$, fluorine atoms in concentration of $1 \times 10^{15} \text{ cm}^{-3}$ to $1 \times 10^{20} \text{ cm}^{-3}$, and hydrogen atoms in concentration of $1 \times 10^{17} \text{ cm}^{-3}$ to $1 \times 10^{21} \text{ cm}^{-3}$.

Also, in line 4 of paragraph [0038] of the specification (page 9) of the Japanese language specification, a concentration of a metal element which promotes crystallization of silicon of " $5 \times 10^{18} \text{ cm}^{-3}$ " is clearly shown.

【 0 0 3 8 】

他の発明の構成は、

結晶性を有する珪素膜を有する半導体装置であって、

前記珪素膜には、

珪素の結晶化を助長する金属元素が $1 \times 10^{16} \text{ cm}^{-3} \sim 5 \times 10^{18} \text{ cm}^{-3}$ の濃度で含まれ、

フッ素原子が $1 \times 10^{15} \text{ cm}^{-3} \sim 1 \times 10^{20} \text{ cm}^{-3}$ の濃度で含まれ、

水素原子が $1 \times 10^{17} \text{ cm}^{-3} \sim 1 \times 10^{21} \text{ cm}^{-3}$ の濃度で含まれ、

ていることを特徴とする。

Due to a typographical error in preparing the *Verified English Translation*, the concentration of a metal element which promotes crystallization of silicon of " $5 \times 10^{18} \text{ cm}^{-3}$ " was inadvertently changed to " $5 \times 10^{19} \text{ cm}^{-3}$ " in line 4 of paragraph [0038] of the specification (bridging pages 8 and 9).

[0038]

An arrangement of another invention is characterized in that in a semiconductor device having a silicon film having a crystallinity, the silicon film contains a metal element which promotes crystallization of silicon in concentration of $1 \times 10^{16} \text{ cm}^{-3}$ to $5 \times 10^{19} \text{ cm}^{-3}$, fluorine atoms in concentration of $1 \times 10^{15} \text{ cm}^{-3}$ to $1 \times 10^{20} \text{ cm}^{-3}$, and hydrogen atoms in concentration of $1 \times 10^{17} \text{ cm}^{-3}$ to $1 \times 10^{21} \text{ cm}^{-3}$.

Further, in line 2 of paragraph [0087] of the specification (page 16) of the Japanese language specification, a concentration of a metal element which promotes crystallization of silicon of " $5 \times 10^{18} \text{ cm}^{-3}$ " is clearly shown.

【 0 0 8 7 】

このようにして得られた結晶性珪素膜は、珪素の結晶化を助長する金属元素が $1 \times 10^{16} \text{ cm}^{-3} \sim 5 \times 10^{18} \text{ cm}^{-3}$ の濃度で含まれ、フッ素原子が $1 \times 10^{15} \text{ cm}^{-3} \sim 1 \times 10^{20} \text{ cm}^{-3}$ の濃度で含まれ、水素原子が $1 \times 10^{17} \text{ cm}^{-3} \sim 1 \times 10^{21} \text{ cm}^{-3}$ の濃度で含まれたものとなる。

Due to a typographical error in preparing the *Verified English Translation*, the concentration of a metal element which promotes crystallization of silicon of " $5 \times 10^{18} \text{ cm}^{-3}$ " was inadvertently changed to " $5 \times 10^{19} \text{ cm}^{-3}$ " in line 2 of paragraph [0087] of the specification (page 15).

[0087]

The crystal silicon film thus formed contains the metal element which promotes crystallization of silicon in concentration of $1 \times 10^{16} \text{ cm}^{-3}$ to $5 \times 10^{19} \text{ cm}^{-3}$, fluorine atoms in concentration of $1 \times 10^{15} \text{ cm}^{-3}$ to $1 \times 10^{20} \text{ cm}^{-3}$, and hydrogen atoms in concentration of $1 \times 10^{17} \text{ cm}^{-3}$ to $1 \times 10^{21} \text{ cm}^{-3}$.

As a result of the above-referenced typographical errors, errors appear in the present specification. Specifically, " $5 \times 10^{19} \text{ cm}^{-3}$ " appears at page 8, line 3, and page 16, line 12, of the present specification, where " $5 \times 10^{18} \text{ cm}^{-3}$ " should appear. As a

result of this error, some of the claims previously recited " $5 \times 10^{19} \text{ cm}^{-3}$ " instead of " $5 \times 10^{18} \text{ cm}^{-3}$."

In order to correct these errors, the Applicants have changed " $5 \times 10^{19} \text{ cm}^{-3}$ " to " $5 \times 10^{18} \text{ cm}^{-3}$ " at page 8, line 3; page 16, line 12.

The Applicants have also amended the specification to correct the following minor typographical errors, which occurred during the preparation of the *Verified English Translation*. The formula " ClF_3 " appears at paragraph [0080] (page 15) of the Japanese language specification, which corresponds with paragraph [0080] (page 14) of the *Verified English Translation*. Due to a minor typographical error, "CLF3" appears instead of " ClF_3 ." This resulted in an error at page 15, line 10 of the present specification. Therefore, the Applicants have changed "CLF3" to " ClF_3 " at page 15, line 10.

The reference number "415" appears at paragraph [0173] (page 28) of the Japanese language specification, which corresponds with paragraph [0173] (page 27) of the *Verified English Translation*. Due to a minor typographical error, "interlayer insulating film 414" appears instead of "interlayer insulating film 415." This resulted in an error at page 29, line 19 of the present specification. Therefore, the Applicants have changed "interlayer insulating film 414" to "interlayer insulating film 415" at page 29, line 19.

The reference number "603" appears at paragraph [0207] (page 32) of the Japanese language specification, which corresponds with paragraph [0207] (page 31) of the *Verified English Translation*. Due to a minor typographical error, "gate electrode 608" appears instead of "gate electrode 603." This resulted in an error at page 35, line 4 of the present specification. Therefore, the Applicants have changed "gate electrode 608" to "gate electrode 603" at page 35, line 6 of the present specification. Also, at page 35, line 5 the Applicants have corrected a minor typographical error in the spelling of the word "silicide."

The Applicants also request the correction of the following minor typographical errors which occurred during the preparation of the *Substitute Specification* filed January 20, 2000. Due to a typographical error, paragraph number "[0041]" was inadvertently included at page 9, line 2 of the *Substitute Specification*. This resulted in an error at page 9, line 2 of the present specification. Therefore, the Applicants have deleted "[0041]" at page 9, line 2 of the present specification.

The phrase "Corning 1737" appears in the *Verified English Translation* at page 10, line 23; page 13, lines 17-18; and page 17, line 4. Due to a typographical error, "Corning" was changed to "Coning" at page 10, line 14; page 13, line 19; and page 18, line 3 of the present specification. Therefore, the Applicants have changed "Coning" to "Corning" at page 10, line 14; page 13, line 19; and page 18, line 3.

The phrase "at 640°C for four hours" appears in the *Verified English Translation* at page 13, line 14. Due to a typographical error, "for four hours" was inadvertently omitted at page 13, line 17 of the *Substitute Specification*. This resulted in an error at page 13, line 17 of the present specification. Therefore, the Applicants have added "for four hours" after "640° C" at page 13, line 17 of the present specification.

Due to a typographical error, paragraph number "[0096]" was inadvertently included at page 17, line 20 of the *Substitute Specification*. This resulted in an error at page 17, line 20 of the present specification. Therefore, the Applicants have deleted "[0096]" at page 17, line 20 of the present specification.

The unit "μm" appears in the *Verified English Translation* at page 17, line 18; page 18, line 4; page 26, line 3; and page 30, line 8. Due to a typographical error, "μm" was changed to "オm" at page 18, line 13; page 19, line 6; page 24, line 18; page 28, line 11; and page 33, line 8 of the *Substitute Specification*. This resulted in errors at page 18, line 13; page 19, line 6; page 24, line 18; page 28, line 11; and page 33, line 8 of the present specification. Therefore, the Applicants have changed "オm" to "μm" at page 18, line 13; page 19, line 6; page 24, line 18; page 28, line 11; and page 33, line 8 of the present specification.

Due to a typographical error, paragraph number "[0159]" was inadvertently included at page 27, line 17 of the *Substitute Specification*. This resulted in an error at page 27, line 17 of the present specification. Therefore, the Applicants have deleted "[0159]" at page 27, line 17 of the present specification.

Further, in the preparation of the present specification, minor typographical and grammatical errors occurred at page 10, line 13 (reference number 102), page 18, line 2 (reference number 202), and page 27, line 10 (reference number 404) as compared to the *Verified English Translation*. Therefore, the Applicants have corrected these errors as noted in detail above.

The above corrections are due to good faith inadvertent errors of a minor character, are of a clerical, typographical or grammatical nature, and do not add new matter.

The Official Action rejects claims 2-13, 15-27 and 29-42 as obvious based on the combination of U.S. Patent No. 5,210,050 to Yamazaki et al.; U.S. Patent No. 4,140,548 to Zimmer; U.S. Patent No. 5,488,000 to Zhang et al; U.S. Patent No. 5,372,860 to Fehlner et al.; U.S. Patent No. 5,365,080 to Yamazaki et al; U.S. Patent No. 5,313,076 to Yamazaki et al; and U.S. Patent No. 5,913,111 to Kataoka et al. The Applicants respectfully submit that a *prima facie* case of obviousness cannot be maintained against the independent claims of the present application, as amended.

As stated in MPEP §§ 2142-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the

references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

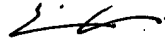
The prior art, either alone or in combination, does not teach or suggest all the features of independent claim 2, as amended. Independent claim 2 has been amended to recite a second insulating film comprising silicon nitride formed over a semiconductor film and a gate electrode, and a third insulating film comprising a resin. In the Official Action dated September 23, 2004 (Paper No. 09202004), column 5, lines 22-25, of Kataoka is relied upon to allegedly teach "to cover the device with a passivation film that can be an organic resin" (page 3, Id.). However, Yamazaki '050, Zimmer, Zhang, Fehlner, Yamazaki '080, Yamazaki '076 and Kataoka, either alone or in combination, do not teach or suggest a second insulating film comprising silicon nitride formed over a semiconductor film and a gate electrode, and a third insulating film comprising a resin.

Since Yamazaki '050, Zimmer, Zhang, Fehlner, Yamazaki '080, Yamazaki '076 and Kataoka do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

New claims 44-74 have been added in order to better recite the features of the present invention. For the reasons stated above and already of record, the Applicants respectfully submit that new claims 44-74 are in condition for allowance.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



Eric J. Robinson
Reg. No. 38,285

Robinson Intellectual Property Law Office, P.C.
PMB 955
21010 Southbank Street
Potomac Falls, Virginia 20165
(571) 434-6789